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**Cherry Picking versus Lemon Grabbing:  
Target Selection of Cross-Border and  
Domestic Acquisitions in Japan\***

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# **Cherry Picking versus Lemon Grabbing: Target Selection of Cross-Border and Domestic Acquisitions in Japan**

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## **Cherry Picking versus Lemon Grabbing: Target Selection of Cross-Border and Domestic Acquisitions in Japan**

### **Abstract:**

This paper investigates whether foreign firms overtake better local targets relative to domestic firms. Building on the geographic proximity and the value creation argument, we make predictions about whether domestic or foreign firms “cherry pick” the targets or “grab lemons”. Our findings from a sample of local targets in Japan acquired by domestic and cross domestic acquirers show that both groups cherry-pick local targets, but they evaluate them differently. Targets with a better financial performance are more likely overtaken by domestic acquirers whereas those with a larger employee or market size are more likely overtaken by foreign acquirers.

*Keywords:* cross-border acquisitions, target selection, cherry-picking, geographic proximity, value creation

## INTRODUCTION

Most international business studies dealing with cross-border acquisitions research on entry modes to foreign markets. Given that, extant empirical studies focus on predicting a firm's likelihood to enter foreign markets (by acquisitions) and to study performance consequence of cross-border acquisitions (Brouthers & Brouthers, 2000; Hennart & Reddy, 1997; Shimizu, Hitt, Vaidyanath, & Pisano, 2004). However, upon choosing acquisitions as an entry mode, a foreign firm must decide which local firm to take over, an important determinant of value creation. We investigate what targets foreign firms end up in contrast with domestic ones.

Despite research advances in cross-border acquisitions, we know little about foreign firms' target choice upon choosing acquisition as an entry mode. Prior acquisition studies predominantly focused on the return to the shareholders of acquiring firms comparing cross-border to domestic acquisitions ( Balsvik & Haller, 2010; Campa & Hernando, 2004; Dewenter, 1995; Eckbo & Thorburn, 2000; Gelübcke, 2013; Gioia & Thomsen, 2004; Kohli & Mann, 2012; Mateev & Andonov, 2016; Shimizu *et al.*, 2004). Increasingly, scholars start paying attention to the target selection pattern of foreign acquirers, especially in comparison with that of domestic acquirers (Balsvik & Haller, 2010; Berger *et al.*, 2005; Chen & Su, 1997; Fukao, Ito, & Kwon, 2005; Paprzyki & Fukao, 2008). However, findings from these studies are mixed. Some suggest that foreign firms tend to cherry-pick more profitable or productive local targets than domestic firms while others find the opposite (that they “grab lemons”), or do

not find any significant difference. More importantly, these studies focus on the financial or manufacturing strength of target firms or plants, ignoring the acquiring firms' search for value creation potential within the targets. If acquisitions are to create value for shareholders, we need to look beyond the targets' realized profitability and productivity and search for the sources of value creation potential within targets when dealing with target selection pattern. Therefore, this study attempts to address this gap in past empirical research by investigating how cross-border acquirers and domestic acquirers vary in their target selection within a given nation in addition to a target's realized profitability and productivity.

Building on cross-border acquisition studies from international market entry and strategic management, we posit that an acquiring firm considers both the potential costs/risks and value creation when acquiring its target; and foreign and domestic acquiring firms differ in their emphasis on potential costs/risks reduction or value creation. Specifically, we predict that whether a target is acquired by a domestic or a foreign firm depends on the geographic proximity between the target and the acquirer and the potential for value creation.

The proposed hypotheses are empirically tested using a sample of Japanese targets overtaken by domestic firms and foreign firms from 1980 to 2016. The pre-acquisition characteristics of targets covered in the current study include the targets' profitability, firm size, and firm growth. Our empirical results reveal that domestic acquirers are more likely to overtake targets with a better financial return (i.e., EBIT and earnings per share) than cross-border acquirers. However, cross-border acquirers are more likely to overtake targets with a

bigger size in employees and market than domestic ones. Our findings indicate that the behavior of both domestic and cross-domestic acquiring firms differs. In this, both types of acquirers cherry pick targets, but they have a different criterion for judging the targets.

Domestic acquiring firms focus on the targets' realized profitability to go against potential costs/risks whereas foreign acquiring firms focus rather on target employees and market size for value creation.

This research makes the following contributions. Our study opens a new research angle in the field of international business by looking into target selection upon a firm's decision to use acquisition as a mode of foreign market entry. Further, we broaden this new research field empirically through examining with a sample of Japanese targets, where the innate difference in geographic and cultural distance among foreign and domestic acquiring firms to the targets are high. Prior examinations centered (besides the US) on cross-border M&A activities within European and UK markets (Mateev & Andonov, 2016), or on Asia (Bremer, Hoshi, Inoue, & Suzuki, 2017) but not specifically on Japan<sup>1</sup>. Further, our study reveals that domestic and foreign acquiring firms systematically differ in their target selection by showing differences in the pre-acquisition characteristics of targets in terms of profitability and size. More importantly, our study to some extent addresses the dispute about whether domestic or foreign acquirers cherry picks targets by showing a fine-grained difference in the target selection between them. Target selection is not a random outcome and both domestic and

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<sup>1</sup> An exception is e.g. Fukao and Murakami (2005).

foreign acquirers cherry pick targets.

In the following sections, we first review prior studies on cross-border acquisitions and then elaborate our theoretical rationale for predicting a target's likelihood of being overtaken by a domestic or cross-domestic acquirer. We then describe our empirical context for testing these predictions and present the results. Finally, we conclude with implications and a discussion.

## **LITERATURE REVIEW**

### **Determinants of Cross-border Acquisitions**

In explaining why cross-border acquisitions occur, scholars from the fields of international business and strategic management have taken two different angles. Prior international business studies heavily focused on explaining "why cross-border acquisitions occur" and compared them to other modes of entry (e.g., Hennart, & Reddy, 1997). Due to the separation in geographic location, each country develops its unique business environment, institutions, and cultures, which increases a firm's cost and risk of conducting business in another country (Eden & Miller, 2004). In general, the costs and risks could stem from transaction problems (i.e., finding, negotiating, monitoring, and opportunistic behavior of partners), institutional differences (i.e., legal restrictions, intangible assets), cultural differences (i.e., investment risks and market potential), and difficulties in business integration (Brouthers and Brouthers, 2000; Hennart and Reddy, 1997; Shimizu *et al.*, 2004). For example, cultural differences between cross-border targets and acquirers affect social integration, subsequently affecting post-acquisition integration

(Björkman, Stahl, & Vaara, 2007). As such, the likelihood of cross-border acquisition depends on the level of expected transaction costs and risks of doing business and integration costs of acquiring targets in the host country (Brouthers & Brouthers, 2000; Hennart & Reddy, 1997). Thus, acquisitions will be undertaken if the transaction costs/risks and integration costs associated with the acquisition are lower than other modes of foreign market entry.

In contrast, prior studies in strategic management focus on explaining "why cross-border acquisitions occur," compared to domestic acquisitions (Shimizu *et al.*, 2004). In general, prior studies indicate that synergy or value is created in an acquisition deal when an acquiring firm can redeploy its existing capabilities to or acquire underutilized capabilities from the acquired target (Ascani, 2017; Capron, Mitchell, & Swaminathan, 2001; Kaul & Wu, 2016; Palepu, 1986). Accordingly, the source of value creation in cross-border acquisitions often comes from redeploying the acquiring firm's specific intangible resources and managerial expertise to take advantage of market imperfections in foreign countries, and the "reverse internationalization" of foreign intangible resources and human capital in their home countries besides diversifying the acquiring firms' financial risk (Aguilera, & Dencker, 2004; Anand, Capron, & Mitchell, 2005; Caves, 1982; Conn, & Connell, 1990; Lessard, 1973; Seth *et al.*, 2000; Shimizu *et al.*, 2004).

In sum, international business studies emphasize the potential costs and risks within cross-border acquisitions whereas strategic management studies emphasize the potential value creation. On the one hand, international business studies tend to emphasize the expected transaction costs

due to geographic distance, ignoring that the geographic distance also influences the potential value creation in a cross-border acquisition. On the other hand, Strategic management studies emphasize the potential value creation in cross-border acquisitions due to geographic distance, ignoring that the geographic distance can also be the barriers to realize the potential value creation. To sum up, both the international business and the strategic management research fields focus on explaining "why cross-border acquisitions occur," not which target to take over.

### **Difference in Value Creation: Domestic vs. Cross-border Acquisitions**

While prior empirical analyses indicate that value creation is the motive for the majority of both foreign and domestic acquisitions, stock market reactions to cross-border acquisitions are sharply different from those to domestic ones (Berkovitch, Elazar, & Narayanan, 1993; Kohli & Mann, 2012; Seth, Song, & Pettit, 2000; Shimizu *et al.*, 2004). For example, based on a sample of Indian takeovers, Kohli & Mann (2012) show that there can be a higher wealth gain to the shareholders at cross-border acquisitions compared to domestic acquisitions. Other studies indicate the opposite. Compared to domestic acquirers, foreign acquirers are more likely to suffer from a higher loss in stock return at the time of announcement or underperformance in the long term (Balsvik, & Haller, 2010; Campa, & Hernando, 2004; Eckbo, & Thorburn, 2000; Gelübcke, 2013; Gioia, & Thomsen, 2004; Mateev, & Andonov, 2016). Still, some other studies show no significant difference between stock market reactions to domestic and cross-border acquisitions (see, e.g., references at Shimizu *et al.*, 2004).

## Determinants of Acquisition Targets

What are the characteristics of targets overtaken by foreign firms compared to domestic firms? Empirical evidence is fragmented. In general, prior studies find that foreign acquirers tend to cherry-pick local targets compared to domestic acquirers (Balsvik & Haller, 2010; Gelübcke, 2013; Gioia & Thomsen, 2004). For example, foreign acquirers cherry-pick the plants in Norway with higher ex-ante factory-level performance relative to domestic acquirers (Balsvik & Haller, 2010). Studies based on Japanese targets reveal a similar pattern (Fukao, Ito, & Kwon, 2005; Paprzyki & Fukao, 2008).

Despite these dominant findings, some studies offer an opposite story (Berger *et al.*, 2005; Chen & Su, 1997; Shimizu *et al.*, 2004; Bebenroth, 2009). For example, Chen and Su (1997) find that U.S. targets of cross-border takeovers are financially worse and invested less in R&D than U.S. targets of domestic takeovers. However, Berger *et al.* (2005) do not find any differences in ex-ante target performance between target banks overtaken by domestic and foreign firms in Argentina in the 1990s.

In sum, prior studies focus mainly on the returns to the shareholders of the acquiring firms as well as the realized profitability or productivity of target firms. The potential for value creation for an acquiring firm to capture within the target firms is not considered. In light of previous geographic proximity and the value creation arguments, we further explore the differences in targets of domestic and foreign firms beyond the targets' realized profitability in the following section.

## **HYPOTHESIS DEVELOPMENT**

### **Target Selection under Geographic Proximity (Transaction and Integration Costs)**

Geographic proximity arguments traditionally suggest that proximity in geographic location results in closeness and similarity, which facilitate face-to-face communication, strengthen relational ties and improve relationships between partners (Ganesan, Malter, & Rindfleisch, 2005; Krugman, 1991). Prior research indicates that geographic proximity between the acquirer and potential targets' subsidiaries within a nation enables the acquirer to collect information about a potential target easier (Chakrabarti, & Mitchell, 2013; Chen, Kale, & Hoskisson, 2018). However, countries in distant geographic location can also develop a different national culture. National cultural differences between firms make the pre-acquisition target evaluation and the post-acquisition integration difficult in regard to knowledge and human capital transfer between firms (Ahammad *et al.*, 2016; Ascani, 2017; Eden, & Miller, 2004; Hennart & Reddy, 1997; Shimizu *et al.*, 2004; Zaheer, 1995). Especially, the integration of knowledge and human capital in cross-border deals remains a big challenge (Ahammad *et al.*, 2016; Hennart & Reddy, 1997). Moreover, extant studies assert cultural differences across countries as the main driver for a lower return from acquisitions to foreign acquirers than domestic acquirers due to higher costs of transaction and integration (Björkman, Stahl, & Vaara, 2007; Larrson & Risberg, 1998; Morosini, Shane, & Singh, 1998; Weber, Shenkar, & Raveh, 1996). Given that the geographic distance between the target and the acquirer is greater

in cross-border acquisitions than domestic acquisitions, geographic proximity will affect target selection.

Particularly in the case that potential targets suffer from financial difficulties, cross-border acquirers would have difficulties to reveal shortcomings at the target. Compared to domestic firms, foreign firms normally do not have the local ties to exchange valuable and private information about the potential targets. Further, due to geographic proximity, domestic acquiring firms cannot only more closely monitor but also more easily communicate with potential targets than foreign acquiring firms. More importantly, empirical evidence shows that prior related acquisition experience of acquiring firms increase their preference for geographically proximate targets, indicating that acquiring firms placed greater weight on expected costs relative to a specific acquisition than its capabilities in handling the costs (Chakrabarti & Mitchell, 2013). Given that domestic acquiring firms are located in the same geographic location as potential local targets, and foreign acquiring firms are not, the targets will be under stronger scrutiny in the potential costs and risks by domestic acquirers than foreign acquirers will. Subsequently, a target with a higher realized financial return is more likely to pass the assessment of domestic acquiring firms. Therefore, we should expect the following:

*H1. Targets with higher profitability will be more likely to be overtaken by domestic acquirers relative to foreign acquirers.*

## **Target Selection under Value Creation**

However, the value creation argument will predict another pattern to foreign acquirers in their target selection. Finance and strategic management studies on acquisitions suggested early, that value creation through integration is the major motive for acquisitions in general, whether they are domestic or cross-border ones (Berkovitch, Elazar, & Narayanan, 1993; Seth, Song, & Pettit, 2000). As discussed above, foreign acquirers are more distant away from local targets than domestic acquirers and; therefore, face greater transaction and integration costs compared to the latter group. Ideal targets for foreign acquirers should offer great potential for a given acquirer to create value to compensate for the high transaction and integration costs occurring to foreign acquirers. In other words, foreign acquirers' synergy motive would justify cross-border acquisitions. In this line of argument, we raise the following question: what targets are more likely to offer a greater value potential for a given foreign acquirer relative to the domestic acquirer?

Prior studies suggest that the possibility of value creation in acquisitions, and therefore a firm's being acquired, depends on the levels of inefficient management (i.e., mismatch between a firm's growth and the financial resources at their disposal) and underutilized intangible assets (i.e. human capital and patent) (Palepu, 1986; Powell, 1997; Ali-Yrkko *et al.*, 2005). Similarly, in the context of cross-border acquisitions, the sources of value creation mainly derive from capability deployment to targets with inefficient management in the host country or from capability acquisition of targets with underutilized intangible assets (i.e., brand name or patent)

(Seth *et al.*, 2000; Shimizu *et al.*, 2004). Moreover, prior research indicates that domestic acquirers tend to pursue targets with lower productivity to deploy their existing capabilities in existing markets, but to acquire targets with higher productivity when entering new markets to acquire the targets' capability (Kaul & Wu, 2016). Following this logic, foreign acquirers should be more likely to acquire targets with the hope for acquiring underutilized valuable intangible assets. Stated different, when targets have more underutilized valuable intangible assets, foreign acquirers will be more likely to benefit from cross-border acquisitions.

In general, underutilized intangible resources (i.e., human capital, brand name, and technology) are more likely to increase with organizational size according to the organizational inertia literature (Hannan & Freeman, 1984). Also, firms with extraordinary high growth are more likely to attract extraordinary management talent (Markman, & Gartner, 2002). However, firms with high growth in the past may fail to continue to grow in the future (Penrose, 1959). As such, firms with a high growth rate in the past are more likely to generate underutilized intangible resources, subsequently becoming ideal acquisition targets for foreign firms. Thus, under the value creation argument, targets that are bigger and having a higher growth rate are more likely to be taken over by cross-border acquirers. We should expect the following:

*H2. Targets with a larger size will be more likely to be overtaken by cross-border acquirers relative to domestic acquirers.*

*H3. Targets with a higher growth rate will be more likely to be overtaken by cross-border acquirers relative to domestic acquirers.*

## **METHODOLOGY**

### **Country-specific Setting**

The proposed hypotheses are tested on the acquisition events in Japan, where local firms are overtaken either by domestic or by cross-border acquirers, from 1980 to 2016. This is an appropriate context to test our hypotheses. First, the barriers to enter the market for corporate control in Japan for foreign firms is relatively low compared to other countries. Japanese officials highly appreciate foreign direct investment to Japan, and the Japanese government has launched some political measures to promote inward FDI. For example, the Ministry of Economy, Trade, and Industry (METI) proposed amendments in 2007, and some of the amendments were to harmonizing Japanese regulations to other leading countries for improved inward FDI to Japan. The government has been pushing forward its economic policy of implementing the “three arrows.” Besides an aggressive monetary policy, a flexible fiscal policy, a growth strategy is intended to motivate private sector investment. One of the cornerstones is a foreign investment into Japan to turn Japan into a global hub (Direct Investment 2016).

Second, despite a historically small Japanese inward FDI in the past, the total number of acquisition transactions in Japan has recently been increasing since 2000 (Marr, 2018; Fukao & Murakami, 2005). Also, foreign firms are quite active in the market for corporate control in Japan, which means they acquire local firms in Japan. In 2017 alone, there were more than 3,050 M&A incidences taking place in Japan. Among them, 198 where foreign acquirers overtook Japanese target companies (out-in M&A) (Marr, 2018). On the other hand, there were 672 incidences

where Japanese acquirers overtook foreign (non-Japanese) targets (in-out M&A) (Marr, 2018).

Third, there is enough variation in the acquirers' country origins, and therefore enough cultural and geographic distance between foreign acquirers and domestic (Japanese) targets to study meaningfully the differences in characteristics between domestic and cross-border targets. Foreign acquirers came from both Western and Asian countries, and from developed and developing countries.

### **Data, Measurements, and Method**

Data were collected from SDC Platinum consisting of all domestic and cross-border acquisitions of Japanese target firms from the years 1980 to 2016. As acquisitions under 50% do not provide bidders enough influence over the target, we deleted these firms. Also, we eliminated all cases of business transfers such as divestitures, spinoffs, and split-offs, because targets in these cases were intentionally separated from their parent companies and often remain independent from their acquirers. Please note that Japanese targets that are the subsidiaries of foreign firms are and should be excluded from the sample to be consistent with the theory. In addition, targets that were previously partially acquired with some non-controlling ownership were also excluded from the sample because these acquirers had lower information asymmetry problems because they know their targets already before the takeover. We also exclude target firms when their primary business is in the financial sector, that means if its four-digit Standard Industrial Classification (SIC) code for the Primary Business codes is 6\*\*\*. However, we

include high-tech firms even when they are located in this sector because they would not primarily deal with ordinary finance business. After these two processes, we were left with 17,212 acquisitions. Due to missing information for variables, mainly performance variables for targets, our observations drop down to 4,098 or 4,288 when the target size is measured by the size of employees or market sales respectively in the final analysis. Table 1 shows the summary statistics for 4,098 sample observations when the target size is measured by the size of employees. Among them, 3,715 Japanese targets were domestically acquired, and 383 Japanese target firms were taken over by cross-domestic acquirers. There are 4,009 observations from publicly listed target firms, with 3,636 domestic acquisition deals and 314 cross-border acquisition deals.

Our dependent variable is the acquirer's domestic or cross-border acquisition status. If the variable is the acquirer's domestic status, it is equal to 1 when a Japanese firm acquired the target and 0 otherwise. If the variable is the acquirer's foreign status, it is equal to 1 when a non-Japanese firm acquired the target and 0 otherwise. To capture the characteristics of targets, we include the indicators reflecting targets' profitability, size, and growth. Regarding profitability, we use "*Earnings before Interest and Tax (EBIT) for the last twelve months (\$ Bil)*" and "*Earnings per Share (EPS) three-year prior the acquisition*" from the SDC database<sup>2</sup>. For target size, we use "*Target Employee Size*" (in the unit of one thousand employees) and "*Net Sales for the Last Twelve Months.*" Regarding target growth, we use "*Target net sales five-year growth rate*

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<sup>2</sup> We also tested with other measures for probability such as the target's return on assets and the return on total equity, but their effects are not significant at all.

(in %).” In addition to the target profitability, size and growth, we also control (1) if target’s primary business is in the high-tech sector, (2) if target is a publicly listed firm, (3) if the target is a diversified firm,(4) the calendar year when the M&A deal was effective, and (5) the number of bidders. Among the control variables, targets are diversified firms if their operative business is in at least two different areas according to the SIC codes. We applied complementary log-log regression analysis to estimate the model.

## RESULTS

Models 1 and 2 are testing for the probability of targets being acquired by domestic or cross-border acquirers respectively with target size being measured by “*Target Number of Employees*” in the equation. Models 3 and 4 are testing for the probability of targets being acquired by domestic or cross-border acquirers respectively with target size measured by “*Net Sales*” in the equation.

Regarding target’s profitability, our results show that target’s EPS three-year prior the acquisition is significantly and positively related to its chance of being overtaken by domestic acquirers in Model 1 ( $\beta = 0.000$ ,  $p \leq 0.10$ ), and both significantly and negatively related to its chance of being overtaken by cross-border acquirers in Model 2 and 4 ( $\beta = -0.000$ ,  $p \leq 0.05$ ;  $\beta = 0.000$ ,  $p \leq 0.05$ ). Moreover, Models 1 and 2 show that targets with a higher EBIT for the last twelve months (\$ Bil) are more likely to be acquired by domestic acquirers in Mode 1 and 3 ( $\beta = 0.170$ ,  $p \leq 0.10$ ;  $\beta = 0.182$ ,  $p \leq 0.05$ ). However, a target’s EBIT has no significant effect on

its chance of being acquired by cross-border acquirers. Thus, regarding a target's profitability, our results indicate that hypothesis 1 is highly supported when target's profitability is measured by EBIT and partially supported when measured by EPS three-years before the acquisition.

Regarding target size, our results show that targets with a larger employee size is significantly and negatively related to its chance of being overtaken by domestic acquirers (Model 1;  $\beta=-0.009$ ,  $p \leq 0.01$ ), but significantly and positively related to its chance of being overtaken by cross-border acquirers (Model 2;  $\beta= 0.017$ ,  $p \leq 0.01$ ). In addition, our results show that targets with a larger market size (net sales) is significantly and negatively related to its chance of being overtaken by domestic acquirers (Model 3;  $\beta=-0.018$ ,  $p \leq 0.01$ ), but significantly and positively related to its chance of being overtaken by cross-border acquirers (Model 4;  $\beta= 0.027$ ,  $p \leq 0.01$ ). Thus, Hypothesis 2 is supported having the target measured by both, target employee size and market size.

Regarding target growth, our results show that targets with a higher net sales 5-Year growth rate are significantly and negatively related to its chance of being overtaken by domestic acquirers (Models 1 and 3;  $\beta=-0.002$ ,  $p \leq 0.01$ ;  $\beta=-0.002$ ,  $p \leq 0.01$ ). However, results in Models 2 and 4 show that target growth rate does not affect a target's chance of being acquired by cross-border acquirers. Thus, while hypothesis 3 is not supported for targets being acquired by foreign firms, our results indicate that domestic firms are less likely to take over high growth targets.

In sum, our results indicate that targets with better financial profitability tend to be taken over by domestic acquirers whereas larger size targets tend to be taken over by cross-border

acquirers. Moreover, high growth firms are less likely to be overtaken by domestic acquirers. Thus, our study shows that both domestic and foreign acquirers cherry pick their targets depending on what is best to them. While domestic acquirers put more weight on the financial health of the targets, cross-border acquirers focus more on the size of the targets in the market for human capital and customers.

### **Robustness check**

The examination in this study only analyzed target firms that were acquired. It could be argued, therefore, that our analysis might suffer from a sample selection bias because these firms may differ from the ones that were not acquired. To address this concern, we implemented the Heckman two-stage selection model (Heckman, 1979). In the selection model, we included 7,035 local (Japanese) firms that we initially downloaded from the SDC database but then excluded from our sample because they were treated as divestitures, spinoffs, and splits. Firms in these deals were intentionally separated from their parent companies. Even if they had a chance of being acquired or integrated with acquirers when they separated from their parent companies, they remained independent. Table 3 shows the results of the Heckman two-stage selection model. In the first stage selection model, we use (1) percentage of ownership sought to acquire by the acquiring firm, (2) target is a public firm and (3) target primary business is in high-tech to predict a firm's chance of being acquired and generated the inverse mills ratio. A significant inverse mills ratio in the second stage suggests the concern for a sample selection bias, and it is recommended to interpret results obtained from the Heckman model. Results in

Table 3 remained mainly the same with the coefficient for EPS three-year before the acquisition becoming significant in all models. Results from Heckman two-stage model corroborate with our initial findings. They indicate that targets with better financial performance in EPS three-year prior the acquisition and a higher EBIT for the last twelve months (\$ Bil) tend to be taken over more likely by domestic acquirers whereas large targets in terms of employee and market size tend to be taken over by cross-border acquirers.

## **CONCLUSIONS AND DISCUSSIONS**

In this paper, we shift the research focus on cross-border acquisitions from foreign market entry mode and acquisition performance to target selection. We examine how the characteristics of targets vary between the ones overtaken by domestic firms and foreign firms. We highlight that target selection is based on potential transaction and integration costs and the potential value creation perceived by an acquiring firm. In this, domestic and cross-border acquirers weigh their targets differently. Our empirical findings suggest domestic acquirers tend to select their targets with better financial return whereas cross-border acquirers tend to select targets with a larger market and employee size. Both domestic and foreign firms cherry pick their targets.

Upon completion of our study, we make the following theoretical contributions. First, our study extends the international business literature on foreign market entry by further asking what target to pick. Second, in the realm of cross-border acquisition studies, our findings reveal the need for scholars to think beyond short-term financial return because what matters is not the

realized financial return, but human capital and the market to explore. These latter factors are what managers of foreign firms seek in cross-border acquisitions. Our results indicate that cross-border acquisitions do not occur because cross-border acquirers merely invest their money for a quick financial return but to access new markets (Grimpe & Husinger, 2014; Makri, Hitt & Lane, 2010; Bauer, Matzler & Wolf, 2016). Third, to the debate on whether cross-border acquirers cherry pick, our findings reveal a subtle story by showing that both domestic and cross-border acquirers cherry pick their targets, but they evaluate them differently. In line with the geographic proximity arguments, targets taken over by domestic firms were the ones with higher financial profitability in the years before the acquisition event. Also in line with the value creation argument and somehow different from domestic acquirers, cross-border acquirers seem to be rather interested in exploring the local human capital market with more employees and a larger customer market. In this, we broaden the tradition of evaluating acquisition targets on their financial performance.

This study also offers also some practical implications. While targets may get into the spotlight of cross-border acquirers, domestic acquirers may not be interested in acquiring the same kind of targets. Moreover, targets who wish to be taken over by domestic acquirers may do so when their financial performance in EPS or EBIT is still high. These findings together imply that Japanese acquirers seem to avoid uncertainty in acquisitions, suggesting that national cultural influence impacts the acquisition behavior strongly (Bremer, Hoshi, Inoue, and Suzuki, 2017).

This research has its limitations, which provide directions for future research. First, we only focus on targets in one single country, which is Japan. The US market is quite open to the external market for corporate control and to foreign bidders. It would be interesting to see if the same pattern observed in Japanese targets holds for US targets. Second, this research is mostly limited to publicly listed target firms. We wonder if the same pattern holds for target firms that are not publicly listed or suffer from severe asymmetric information. Last, we have not investigated the post-acquisition performance, but just the target selection, in cross-border acquisitions. Cross-border acquirers may not always safely compensate for their high risk associated with the value created in cross-border acquisitions, subsequently ending up with grabbing lemons. It would be interesting to know the conditions under which cherries turn into lemons. Despite its limitations, this work shows alternative explanations for an understudied topic that cross-border acquirers, in fact, overtake targets with the larger employee and market size compared to domestic acquirers. We have evidence that both domestic and cross-border acquirers “cherry pick” their targets in their own ways.

## REFERENCE

- Aguilera, R. V., & Dencker, J. C. (2004). The role of human resource management in cross-border mergers and acquisitions. *The International Journal of Human Resource Management*, 15(8), 1355-1370.
- Ahammad, M. F., Tarba, S. Y., Liu, Y., & Glaister, K. W. (2016). Knowledge transfer and cross-border acquisition performance: The impact of cultural distance and employee retention. *International Business Review*, 25(1), 66-75.
- Ali-Yrkkö, J., Hyytinen, A., & Pajarinen, M. (2005). Does patenting increase the probability of being acquired? Evidence from cross-border and domestic acquisitions. *Applied Financial Economics*, 15(14), 1007-1017.
- Anand, J., Capron, L., & Mitchell, W. (2005). Using acquisitions to access multinational diversity: thinking beyond the domestic versus cross-border M&A comparison. *Industrial and Corporate Change*, 14(2), 191-224.
- Ascani, A. (2017). The takeover selection decisions of multinational enterprises: empirical evidence from European target firms. *Journal of Economic Geography*. lbx035,
- Balsvik, R. & Haller S.A. (2010). Picking 'Lemons' or Picking 'Cherries'? Domestic and Foreign Acquisitions in Norwegian Manufacturing. *The Scandinavian Journal of Economics*, 112(2): 361-387.
- Bauer, F., Matzler, K., & Wolf, S. (2016). M&A and innovation: The role of integration and cultural differences—A central European targets perspective. *International Business Review*, 25(1), 76-86.
- Bebenroth, R. (2009). Foreign M&A in Japan: Do foreign firms cherry pick Japanese targets? *Kobe Economic & Business Review*, 54: 1-16.
- Berger, A. N., Clarke, G. R., Cull, R., Klapper, L., & Udell, G. F. (2005). Corporate governance and bank performance: A joint analysis of the static, selection, and dynamic effects of domestic, foreign, and state ownership. *Journal of Banking & Finance*, 29(8), 2179-2221.
- Berkovitch, E., & Narayanan, M. P. (1993). Motives for takeovers: An empirical investigation. *Journal of Financial and Quantitative analysis*, 28(3), 347-362.
- Björkman, I., Stahl, G. K., & Vaara, E. (2007). Cultural differences and capability transfer in cross-border acquisitions: The mediating roles of capability complementarity, absorptive capacity, and social integration. *Journal of International Business Studies*, 38(4): 658-672.
- Bremer, M., Hoshi, A., Inoue, K., & Suzuki, K. (2017). Uncertainty avoiding behavior and cross-border acquisitions in the Asia-Pacific region. *Japan and the World Economy*, 41, 99-112.
- Brouthers, K. (2002). Institutional, Cultural and Transaction Cost Influences on Entry Mode Choice and Performance. *Journal of International Business Studies*, 33(2), 203-221
- Brouthers, K., and Brouthers, L. (2000). Acquisition or Greenfield Start-up? Institutional, Cultural and Transaction Cost Influences. *Strategic Management Journal*, 21(1), 89-

- Campa, J. M., & Hernando, I. (2004). Shareholder value creation in European M&As. *European financial management*, 10(1): 47-81.
- Capron, L., Mitchell, W., & Swaminathan, A. (2001). Asset divestiture following horizontal acquisitions: A dynamic view. *Strategic management journal*, 22(9), 817-844.
- Chakrabarti, A., & Mitchell, W. (2013). The persistent effect of geographic distance in acquisition target selection. *Organization Science*, 24(6), 1805-1826.
- Chen, C., & Su, R. (1997). Do cross-border acquisitions of US targets differ from US domestic takeover targets?. *Global Finance Journal*, 8(1): 71-82.
- Chen, Z., Kale, P., & Hoskisson, R. E. (2018). Geographic overlap and acquisition pairing. *Strategic Management Journal*, 39(2), 329-355.
- Dewenter, K. L. (1995). Does the market react differently to domestic and foreign takeover announcements? Evidence from the U.S. chemical and retail industries. *Journal of Financial Economics*, 37:421-441.
- Direct Investment (2016). Policy Package for Promoting Foreign Direct Investment into Japan to Make Japan a Global Hub. Japanese Council for Promotion of Foreign Direct Investment in Japan. May 20th 2016, Internet: [http://www.invest-japan.go.jp/committee/policy\\_package\\_en.pdf](http://www.invest-japan.go.jp/committee/policy_package_en.pdf), accessed on April 14th. 2017.
- Eckbo, B. E., & Thorburn, K. S. (2000). Gains to bidder firms revisited: domestic and foreign acquisitions in Canada. *Journal of Financial and Quantitative Analysis*, 35(1): 1-25.
- Eden, L., & Miller, S. R. (2004). Distance matters: Liability of foreignness, institutional distance and ownership strategy. In: *Theories of the Multinational Enterprise: Diversity, Complexity and Relevance*, 187-221. Emerald Group Publishing Limited.
- Fukao, K., Ito, K., & Kwon, H. U. (2005). Do out-in M&As bring higher TFP to Japan? An empirical analysis based on micro-data on Japanese manufacturing firms. *Journal of the Japanese and International Economies*, 19(2), 272-301.
- Fukao, K. and Murakami, Y. (2005). Do Foreign Firms Bring Greater Total Factor Productivity to Japan?. *Journal of the Asia Pacific Economy*, 10(2):237-254.
- Ganesan, S., Malter, A. J., & Rindfleisch, A. (2005). Does distance still matter? Geographic proximity and new product development. *Journal of Marketing*, 69(4): 44-60.
- Gelübcke, J. P. W. (2013). Foreign and domestic takeovers in Germany: Cherry-picking and lemon-grabbing. *Applied Economics Quarterly*, 59(4), 275-294.
- Gioia, C., & Thomsen, S. (2004). International acquisitions in denmark 1990-1997: Selection and performance. *Applied Economics Quarterly*, 50(1), 61-87.
- Gomes, E., Cohen, M., and Mellahi, K. (2011). When two African cultures collide: A study of interactions between managers in a strategic alliance between two African organizations. *Journal of World Business*, 46:5-12.

- Gomes, E., Weber, Y., Brown, C., and Tarba, S.Y. (2011). *Mergers, Acquisitions and Strategic Alliances: Understanding The Process*. Basingstoke, UK: Palgrave Macmillan.
- Grimpe, C., & Hussinger, K. (2014). Resource complementarity and value capture in firm acquisitions: The role of intellectual property rights. *Strategic Management Journal*, 35(12), 1762-1780.
- Hannan, M. T., & Freeman, J. (1984). Structural inertia and organizational change. *American sociological review*, 149-164.
- Heckman, I.J. (1979) Sample selection bias as a specification error. *Econometrica* 47 (1): 153-162.
- Hennart, J., & Reddy, S. (1997). The Choice between Mergers/Acquisitions and Joint Ventures: The Case of Japanese Investors in the United States. *Strategic Management Journal*, 18(1), 1-12.
- Kohli, R., & Mann, B. J. S. (2012). Analyzing determinants of value creation in domestic and cross border acquisitions in India. *International Business Review*, 21(6), 998-1016.
- Krug, J. A., & Hegarty, W. H. (2001). Predicting who stays and leaves after an acquisition: A study of top managers in multinational firms. *Strategic Management Journal*, 22(2): 185-196.
- Krugman, P. (1991). *Geography and Trade*. Cambridge, MA: MIT Press.
- Kaul, A., & Wu, B. (2016). A capabilities-based perspective on target selection in acquisitions. *Strategic Management Journal*, 37(7), 1220-1239.
- Larsson, R., & Risberg, A. (1998). Cultural awareness and national versus corporate barriers to acculturation. *De Gruyter Studies in Organization*, 39-56.
- Makri, M., Hitt, M. A., & Lane, P. J. (2010). Complementary technologies, knowledge relatedness, and invention outcomes in high technology mergers and acquisitions. *Strategic Management Journal*, 31, 602–628.
- Markman, G. D., & Gartner, W. B. (2002). Is extraordinary growth profitable? A study of Inc. 500 high-growth companies. *Entrepreneurship theory and practice*, 27(1), 65-75.
- Marr Several Issues, (1995 to 2009, 2018) *Mergers Acquisition Research Report*. Recof-Data report (in Japanese).
- Mateev, M., & Andonov, K. (2016). Do cross-border and domestic bidding firms perform differently? New evidence from continental Europe and the UK. *Research in International Business and Finance*, 37: 327-349.
- Morosini, P., Shane, S., & Singh, H. (1998). National cultural distance and cross-border acquisition performance. *Journal of international business studies*, 29(1), 137-158.
- Myers, S. C. (1984). Finance theory and financial strategy. *Interfaces*, 14(1), 126-137.
- Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of financial economics*, 13(2), 187-221.
- Palepu, K. G. (1986). Predicting takeover targets: A methodological and empirical analysis. *Journal of accounting and economics*, 8(1), 3-35.

- Paprzycki, R., & Fukao, K. (2008). *Foreign direct investment in Japan: multinationals' role in growth and globalization*. Cambridge University Press.
- Powell, R. G. (1997). Modelling takeover likelihood. *Journal of Business Finance & Accounting*, 24 (7-8), 1009-1030.
- Reynolds, N. S., & Teerikangas, S. (2016). The international experience in domestic mergers—Are purely domestic M&A a myth?. *International Business Review*, 25(1), 42-50.
- Seth, A., Song, K. P., & Pettit, R. (2000). Synergy, managerialism or hubris? An empirical examination of motives for foreign acquisitions of US firms. *Journal of international business studies*, 31(3), 387-405.
- Shimizu, K., Hitt, M. A., Vaidyanath, D., & Pisano, V. (2004). Theoretical foundations of cross-border mergers and acquisitions: A review of current research and recommendations for the future. *Journal of International Management*, 10(3): 307-353.
- Weber, Y., Shenkar, O., & Raveh, A. (1996). National and corporate cultural fit in mergers/acquisitions: An exploratory study. *Management science*, 42(8): 1215-1227.
- Zaheer, S. (1995). Overcoming the liability of foreignness. *Academy of Management journal*, 38(2): 341-363.

**Table 1. Summary statistics and correlation matrix**

|             | <b>Variable</b>                              | <b>Mean</b> | <b>Std. Dev.</b> | <b>(1)</b> | <b>(2)</b> | <b>(3)</b> | <b>(4)</b> | <b>(5)</b> | <b>(6)</b> | <b>(7)</b> | <b>(8)</b> | <b>(9)</b> | <b>(10)</b> | <b>(11)</b> | <b>(12)</b> |
|-------------|--|-------------|------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|
| <b>(1)</b>  | Target acquired by Cross Domestic Acquirer   | 0.907       | 0.291            | 1.000      |            |            |            |            |            |            |            |            |             |             |             |
| <b>(2)</b>  | Target acquired by Domestic Acquirer         | 0.079       | 0.269            | -0.910     | 1.000      |            |            |            |            |            |            |            |             |             |             |
| <b>(3)</b>  | Target EPS Three Years Prior                 | -10.955     | 296.411          | 0.041      | -0.044     | 1.000      |            |            |            |            |            |            |             |             |             |
| <b>(4)</b>  | EBIT Last Twelve Months (\$ Bil)             | 0.053       | 0.386            | 0.008      | 0.001      | 0.008      | 1.000      |            |            |            |            |            |             |             |             |
| <b>(5)</b>  | Target Number of Employees (K)               | 2.478       | 8.951            | -0.047     | 0.045      | 0.011      | 0.569      | 1.000      |            |            |            |            |             |             |             |
| <b>(6)</b>  | Target Net Sales Last Twelve Months (\$ Bil) | 1.186       | 4.772            | -0.031     | 0.036      | 0.010      | 0.726      | 0.789      | 1.000      |            |            |            |             |             |             |
| <b>(7)</b>  | Target Net Sales 5-Year Growth Rate (%)      | 4.648       | 23.662           | -0.029     | 0.015      | 0.055      | 0.024      | 0.005      | -0.003     | 1.000      |            |            |             |             |             |
| <b>(8)</b>  | Target Primary Business is in High-tech      | 0.304       | 0.460            | -0.017     | 0.002      | -0.017     | 0.019      | 0.028      | -0.011     | 0.086      | 1.000      |            |             |             |             |
| <b>(9)</b>  | Target is a public Firm                      | 0.978       | 0.146            | 0.010      | -0.006     | 0.001      | 0.012      | 0.015      | 0.004      | 0.003      | 0.022      | 1.000      |             |             |             |
| <b>(10)</b> | Target is a diversified firm                 | 0.881       | 0.324            | 0.014      | -0.002     | 0.035      | 0.037      | 0.060      | 0.058      | 0.018      | 0.118      | 0.028      | 1.000       |             |             |
| <b>(11)</b> | Year M&A deal Effective                      | 2007.679    | 4.748            | 0.090      | -0.092     | 0.006      | 0.017      | 0.014      | -0.015     | 0.022      | 0.157      | 0.071      | 0.194       | 1.000       |             |
| <b>(12)</b> | Number of Bidders                            | 1.004       | 0.080            | 0.005      | -0.003     | 0.002      | -0.011     | 0.015      | 0.003      | -0.019     | 0.001      | -0.056     | -0.010      | -0.032      | 1.000       |

**Table 2. Target characteristics and their likelihood of taking over by domestic or foreign acquirers using complementary log-log model**

|                             |  | (1)                                  | (2)                                 | (3)                                  | (4)                                 |
|-----------------------------|--|--------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|
|                             | <b>Dependent variable</b>                    | =1 if overtaken by domestic acquirer | =1 if overtaken by foreign acquirer | =1 if overtaken by domestic acquirer | =1 if overtaken by foreign acquirer |
| <b>Target Profitability</b> | Target EPS Three Years Prior                 | 0.000 <sup>+</sup>                   | -0.000 <sup>**</sup>                | 0.000                                | -0.000 <sup>**</sup>                |
|                             |  | (0.000)                              | (0.000)                             | (0.000)                              | (0.000)                             |
|                             | Target EBIT Last Twelve Months (\$ Bil)      | 0.170 <sup>+</sup>                   | -0.302                              | 0.182 <sup>*</sup>                   | -0.319                              |
|                             |  | (0.087)                              | (0.195)                             | (0.089)                              | (0.235)                             |
| <b>Target Firm size</b>     | Target Number of Employees (K)               | -0.009 <sup>**</sup>                 | 0.017 <sup>**</sup>                 |                                      |                                     |
|                             |  | (0.003)                              | (0.005)                             |                                      |                                     |
|                             | Target Net Sales Last Twelve Months (\$ Bil) |                                      |                                     | -0.018 <sup>**</sup>                 | 0.027 <sup>**</sup>                 |
|                             |  |                                      |                                     | (0.006)                              | (0.010)                             |
| <b>Target Firm growth</b>   | Target Net Sales 5-Year Growth Rate (%)      | -0.002 <sup>*</sup>                  | 0.002                               | -0.002 <sup>*</sup>                  | 0.002                               |
|                             |  | (0.001)                              | (0.002)                             | (0.001)                              | (0.002)                             |
| <b>Control variables</b>    | Target Primary Business is in High-tech      | -0.085 <sup>+</sup>                  | 0.097                               | -0.093 <sup>*</sup>                  | 0.117                               |
|                             |  | (0.046)                              | (0.124)                             | (0.045)                              | (0.121)                             |
|                             | Target is a Public Firm                      | 0.040                                | -0.013                              | -0.005                               | 0.098                               |
|                             |  | (0.140)                              | (0.360)                             | (0.134)                              | (0.359)                             |
|                             | Target is a Diversified Firm                 | 0.010                                | 0.146                               | -0.007                               | 0.181                               |
|                             |  | (0.065)                              | (0.175)                             | (0.063)                              | (0.173)                             |
|                             | Year M&A Deal Effective                      | 0.025 <sup>**</sup>                  | -0.070 <sup>**</sup>                | 0.023 <sup>**</sup>                  | -0.065 <sup>**</sup>                |
|                             |  | (0.004)                              | (0.011)                             | (0.004)                              | (0.011)                             |
|                             | Number of Bidders                            | 0.157                                | -0.268                              | 0.136                                | -0.224                              |
|                             |  | (0.293)                              | (0.781)                             | (0.294)                              | (0.781)                             |
| Constant                    | -49.704 <sup>**</sup>                        | 138.785 <sup>**</sup>                | -44.898 <sup>**</sup>               | 127.403 <sup>**</sup>                |                                     |
|                             | (8.899)                                      | (22.985)                             | (8.608)                             | (22.507)                             |                                     |
|                             | LR chi2(9)                                   | 55.93                                | 50.54                               | 48.57                                | 44.49                               |
|                             | Observations                                 | 4098                                 | 4098                                | 4288                                 | 4288                                |
|                             | Zero outcomes                                | 383                                  | 3,776                               | 397                                  | 3,954                               |
|                             | Nonzero outcomes                             | 3,715                                | 322                                 | 3,891                                | 334                                 |

Standard errors in parentheses

<sup>+</sup>  $p < 0.10$ , <sup>\*</sup>  $p < 0.05$ , <sup>\*\*</sup>  $p < 0.01$

**Table 3. Target Characteristics and their likelihood being overtaken by domestic or cross domestic acquirers using Heckman Two-stage Selection model**

|   | (5)                                  | (6)  | (7)                                  | (8)                                       |
|---|--------------------------------------|--|--------------------------------------|---|
| <b>Main Model</b>                           |                                      |  |                                      |   |
| <b>Dependent variable</b>                   | =1 if overtaken by domestic acquirer | =1 if overtaken by cross domestic acquirer | =1 if overtaken by domestic acquirer | =1 if overtaken by cross domestic acquire |
| Target EPS Three Years Prior                | 0.000**<br>(0.000)                   | -0.000**<br>(0.000)                        | 0.000*<br>(0.000)                    | -0.000*<br>(0.000)                        |
| Target EBIT Last Twelve Months (\$ Bil)     | 0.045**<br>(0.014)                   | -0.032*<br>(0.013)                         | 0.061**<br>(0.017)                   | -0.048**<br>(0.016)                       |
| Target Number of Employees (K)              | -0.002**<br>(0.001)                  | 0.002**<br>(0.001)                         |                                      |   |
| Target Net Sales Last Twelve Month (\$ Bil) |                                      |  | -0.005**<br>(0.001)                  | 0.004**<br>(0.001)                        |
| Target Net Sales 5-Year Growth Rate (%)     | -0.000+<br>(0.000)                   | 0.000<br>(0.000)                           | -0.000*<br>(0.000)                   | 0.000<br>(0.000)                          |
| Target primary business is in High-tech     | -0.020*<br>(0.010)                   | 0.009<br>(0.009)                           | -0.022*<br>(0.010)                   | 0.011<br>(0.009)                          |
| Target is a public firm                     | 0.223*<br>(0.089)                    | -0.225**<br>(0.082)                        | 0.164+<br>(0.085)                    | -0.185*<br>(0.078)                        |
| Target is a diversified firm                | 0.007<br>(0.014)                     | 0.005<br>(0.013)                           | 0.003<br>(0.014)                     | 0.008<br>(0.013)                          |
| Year M&A deal effective                     | 0.005**<br>(0.001)                   | -0.005**<br>(0.001)                        | 0.005**<br>(0.001)                   | -0.005**<br>(0.001)                       |
| Number of bidders                           | 0.007<br>(0.069)                     | 0.007<br>(0.064)                           | 0.004<br>(0.070)                     | 0.010<br>(0.064)                          |
| Constant                                    | -10.267**<br>(2.030)                 | 10.723**<br>(1.871)                        | -9.064**<br>(1.954)                  | 9.759**<br>(1.801)                        |
| <b>Selection Model</b>                      |                                      |  |                                      |   |
| <b>Dependent variable</b>                   | =1 if local firm i got acquired      |  |                                      |   |
| % ownership sought to acquire               | -0.019**<br>(0.001)                  | -0.019**<br>(0.001)                        | -0.019**<br>(0.001)                  | -0.019**<br>(0.001)                       |
| Target is a public Firm                     | 3.537**<br>(0.074)                   | 3.537**<br>(0.074)                         | 3.526**<br>(0.072)                   | 3.526**<br>(0.072)                        |
| Target Primary Business is in High-tech     | -0.117<br>(0.080)                    | -0.117<br>(0.080)                          | -0.137+<br>(0.078)                   | -0.137+<br>(0.078)                        |
| Constant                                    | -0.677**<br>(0.097)                  | -0.677**<br>(0.097)                        | -0.633**<br>(0.096)                  | -0.633**<br>(0.096)                       |
| mills                                       |                                      |  |                                      |   |
| lambda                                      | 0.098*<br>(0.039)                    | -0.103**<br>(0.036)                        | 0.077*<br>(0.038)                    | -0.090**<br>(0.035)                       |
| Wald chi2(9)                                | 63.81                                | 57.87                                      | 57.80                                | 55.33                                     |
| Observations                                | 11133                                | 11133                                      | 11316                                | 11316                                     |
| Censored obs                                | 7,170                                | 7,170                                      | 7,170                                | 7,170                                     |
| Uncensored obs                              | 3,963                                | 3,963                                      | 4,146                                | 4,146                                     |

Standard errors in parentheses

+  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$